

WILSON SHUTE BRIDGE
Spanning French Creek at State Road 2008
(Formerly Local Road 20027)
Meadville Vicinity
Crawford County
Pennsylvania

HAER No. PA-191

HAER
PA
20-MEDVI.V
3-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Northeast Region
Philadelphia Support Office
U.S. Custom House
200 Chestnut Street
Philadelphia, PA 19106

HISTORIC AMERICAN ENGINEERING RECORD

WILSON SHUTE BRIDGE

HAER No. PA-191

HAER
PA
20-MEDVI.V,
3-

Location: Spanning French Creek at State Road 2008 (previously known as Local Road 20027), Meadville Vicinity, Crawford County, Pennsylvania

UTM: 17.570810.4604290
Quad: Geneva, Pennsylvania

Date of Construction: 1888-89

Fabricator: Penn Bridge Company, Beaver Falls, Pennsylvania

Present Owner: Pennsylvania Department of Transportation
Transportation and Safety Building
Harrisburg, PA 17120

Present Use: Vehicular bridge

Significance: The Wilson Shute Bridge is one of the many civil engineering landmarks that document Pennsylvania's rich historic transportation heritage. As an example of a steel Pratt through truss, it represents one of the five major categories of bridge types in the Commonwealth prior to the World War II era. Being one of the better survivors of that engineering tradition, it was listed in the National Register of Historic Places on June 22, 1988, as part of a thematic nomination entitled, "Highway Bridges Owned by the Commonwealth of Pennsylvania, Department of Transportation."

Project Information: In accordance with the Memorandum of Agreement, this documentation was undertaken in December 1990 by the Pennsylvania Department of Transportation as a mitigative measure prior to demolition of the bridge.

Carol A. Benenson
Historic Preservation Specialist
KFS Historic Preservation Group
Kise Franks & Straw
Philadelphia, Pennsylvania

WILSON SHUTE BRIDGE
HAER No. PA-191 (Page 2)

The Wilson Shute Bridge spans French Creek between Union and West Mead Townships in Crawford County, Pennsylvania, approximately 2.5 miles south of Meadville, the county seat. Immediately upstream from the bridge, the alignment of French Creek makes an abrupt and acute turn to the southeast. The setting of the bridge is rural, the banks on either side of the stream supporting deciduous forest (silver maple, tulip poplar, sumac, alders, gill-on-ground, may apple, and grape vine) and the area beyond cultivated for agricultural purposes. On the West Mead Township (east) side of the bridge, the Pennsylvania Fish Commission owns land along the creek. French Creek in this reach is a "1A" scenic river on the state's Scenic River System Inventory.

The Wilson Shute Bridge is a Pratt through truss, one of the most common metal truss types represented by Pennsylvania's historic highway bridges. It is a single span pin-connected bridge, lightly structured of typical members, eyebars, and riveted angles and channels with linking bars. The single steel through truss spans 158 feet and the clear roadway width is 15'1". The bridge, painted antique bronze in 1979, has undergone minimal alterations to its superstructure and retains a high degree of integrity.

The substructure of the bridge is comprised of the 1888 coarsed ashlar sandstone masonry anchoring the bridge into the east and west banks of French Creek. The masonry abutments and wing walls are founded on concrete footers. The original configuration of the east abutment and wing walls is intact although the large sandstone blocks have been repointed with a coarse aggregate mortar. Large areas of this mortar are missing, indicating that the structure is again in need of repointing. The original configuration of the west stone abutment and wing walls has been masked significantly behind an embankment that was constructed to protect the bank from scour action. Pennsylvania Department of Transportation plans for abutment support were prepared in 1973 and the work presumably was executed shortly thereafter. Approximately 1 1/2 courses of the original sandstone abutment are still visible between the embankment and the underside of the deck.

The structural steel pin-connected through truss is comprised of a 10-panel span in a traditional Pratt form with parallel top and bottom chords. The panels measure 16'-4" center to center. The top chords of the truss are pairs of 8"-deep channels connected on the top with a continuous 12" x 1/4"-thick plate and on the bottom with 6" x 5/16" x 11 3/4"-long plates at approximately 3'-0" spacing. The bottom chords of the truss are either two or four plates, 2 1/2" deep and from 3/4" to 1" thick. These plates are enlarged at the ends to form I-bars which are attached to the verticals with pins.

The verticals of the truss are pairs of channels, ranging from 8" to 5" deep, connected at each end with steel lattice straps 1 1/4" x 1/4" x 1'-3" long. The first vertical from the end of the truss is a tension bar 2" x 15/16" thick, similar to the bottom chords. The diagonals of the truss are two plates ranging in size from 3 1/8" x 15/16" thick to 1 1/2" x 5/8" thick. Additional diagonals in the center four panels, oriented the same as diagonals in a Howe truss, are comprised of two 1"-diameter rods and one 1 1/2" x 5/8"-thick plate. Lateral struts between the two top chords are shallow Warren trusses comprised of a pair of angles, 3" x 3" x 1/4" thick, for top and bottom chords and steel lattice straps, 2" x 1/4" thick, for diagonals. There are no verticals.

Diagonal bracing rods 1" in diameter exist within the panels formed by the lateral struts. Within the end truss panels the top chord slopes down to meet the bottom chord. The sloping chords of the two trusses are connected to form a portal frame at each end of the bridge.

Horizontal portal members consist of latticework above knee braces infilled with lattice as well. The latticework originally was embellished with cast iron rosettes, the majority of which have broken off, and cast iron decorative end caps, all missing except for the one on the north end post of the east portal. Embellishing each portal are a cast iron cartouche, enframing a nameplate, and a pendant. The nameplates read:

1888
Penn Bridge Company
Builders,
Beaver Falls, PA
Henry P. Marley *Edwin J. Bailey*
Walter R. Lindsay
Commissioners

One base bracket of the cartouche on the west portal has fallen off, but is known to be in the possession of a neighbor.

The floor beams, spaced 16'-4" apart, are hung from the truss by U-bolts. These members are built-up I-beams with 3" x 3" x 3/8"-thick angle flanges and 3/8"-thick web stiffeners. The beams are 2'-0" deep within the middle half of the span and taper to 1'-0" deep at the ends. The flanges and web stiffeners are riveted onto the I-beams. The original nine stringers were of 2" x 12" timbers spaced 2'-0" apart. In 1936-37, these were replaced by six steel I-beams spaced 3'-0" apart and welded to the floor beams. They have undergone severe oxidation and deterioration. The floor deck itself, installed in January of 1980, consists of 2" x 6" wooden boards. Inspection reports from 1931-32 and 1946 (also a redecking) indicate that the previous decking had been 2" x 4" boards. Timber wheel guards were installed with the 1980 redecking. Railing consists of twin 2"-diameter pipes bolted to the verticals; various sections have been broken or replaced. At the first vertical tension member of each corner of the bridge, 3" x 8" timber is used as a spacer between the railing and member.

The original dirt road leading to either end of the bridge was first paved in 1952. The approach to the bridge is concrete beneath the pavement. The east approach has a timber guard rail with wood posts; the north side of the west approach has a corrugated beam guard rail.

In 1797 Robert Wilson settled along French Creek at the mouth of what was to be known as Wilson's Run. Towards the end of the next century, an iron truss bridge crossing the creek along S.R. 2008 would bear his name as well. The Wilson Shute Bridge, listed in the National Register of Historic Places as part of a thematic nomination of state-owned highway bridges, was erected during a boom period of iron bridge construction in the county. In the two decades between 1867 and 1887, twenty-eight iron bridges were erected.¹ It was also an era of metal bridge construction throughout the Commonwealth and the nation, as the demand for railroads spurred the development of bridges that were dependable and easily manufactured. Although many of the advancements in metal bridge technology resulted from the railroads, such advancements were readily applied to highway transportation as well.

The Wilson Shute Bridge, construction of which began in the summer of 1888, was intended to "greatly shorten the distance to points west of the Nypano crossing, on the Mercer Pike."² The Mercer and Meadville Turnpike had been opened in 1821. Prior to construction of the Wilson Shute Bridge, local farmers forded the creek at a point further downstream, near where the power

lines now are. According to the son of an earlier resident, some members of the community continued to ford the creek after completion of the bridge, in protest of taxes raised by the county to undertake the project.³ Although construction of the bridge began in the summer of 1888, unusually wet weather in the fall postponed completion of the bridge. Work on the abutments ceased in December 1888, then resumed in April 1889. The iron assembly was begun in early May and by the 23rd of that month, the bridge was completed. This work also included surveying and straightening the new road from Creek Road (Route 322) on the east side of the bridge. Wilson Shute Road (a/k/a L.R. 20027 and S.R. 2008) and the bridge were maintained by Crawford County until 1931 when the road was adopted by the Commonwealth as a state highway.

The Penn Bridge Company of Beaver Falls, Pennsylvania, was responsible for building the Wilson Shute Bridge. T.B. White & Sons organized the firm in 1868 and established its plant in New Brighton before moving to Beaver Falls in 1878. The firm, which reorganized and incorporated in 1887 as the Penn Bridge Company, produced wrought iron, steel, and combination bridges; iron substructures, buildings, and roof trusses; and plate, box, and lattice girders and architectural ironwork.⁴ Other Crawford County bridges erected by the Penn Bridge Company include a single intersection Pratt bridge on L.R. 897 crossing Little Conneautte Creek, Cambridge Township (1895), and a Pratt pony truss bridge on L.R. 384 crossing Conneautte Creek, Spring Township (1899). Elsewhere in Pennsylvania, the Penn Bridge Company built the four-span, Parker truss Catawissa River Bridge on L.R. 183 over the North Branch of the Susquehanna River, in Catawissa Borough, Columbia County (1898), and a two-span, Pennsylvania (Petit) bridge in Athens Township, Bradford County, on L.R. 08081 over the Susquehanna River (1916).

The Wilson Shute Bridge was erected at a point along the French Creek between Mead and Union Townships, the former being divided into West and East Mead by the turn of the century. During the late nineteenth century, as well as today, Crawford County could be characterized as agricultural. In 1880, the two principal crops were oats and corn: 1,128,674 bushels of oats were produced on 32,072 acres, and 829,369 bushels of corn on 24,618 acres. Wheat, buckwheat, rye, and barley were other leading cereal crops. In addition to agriculture, other important industries included lumbering, stock-raising, and dairying.⁵ The principal commercial center for the sale and purchase of goods was Meadville, the county seat. The Wilson Shute Bridge provided a crossing for farmers from Union Township and points beyond to easily reach Creek Road, the route to Meadville.

Mead Township, organized in 1790, is located on the east side of French Creek. It is the oldest township in Crawford County and originally encompassed all of what is now Crawford and Erie Counties. This vast area subsequently was divided into several smaller townships. The Franklin Branch of the New York, Pennsylvania, and Ohio Railroad passed through the township along the French Creek Valley; the tracks from this rail line remain in close vicinity to the bridge crossing. Historical accounts from the 1880s, the period during which the Wilson Shute Bridge was erected, report the 1880 population of Mead Township as 2,857 and dairying and stock-raising as primary industries.⁶ The grassy terrain, consisting of hills and dales as well as large flat expanses, was conducive to these agricultural endeavors, while the water power from the various creeks was harnessed for sawmills, grist mills, and other industrial uses.

The land through which the railroad and road to the Wilson Shute Bridge passed was part of a property known as the "R.C. McMichael Farm." Robert C. McMichael had acquired his 180-acre

tract and erected a Victorian brick house on the east side of Creek Road (Rt. 322) by the 1870s. In 1883 his property was sold at sheriff's sale to Cyrus Kitchen, President in Trust for the Meadville Savings Bank, who conveyed the farm to Samuel Justus of Oil City less than two weeks before the bridge opened in May of 1889. The property changed hands several times throughout the early years of the twentieth century. It was purchased by Gilbert S. Gongaware in 1943, who in 1954 sold 7.26 acres of creek frontage to the north of S.R. 2008 and 8.24 acres of creek frontage to the south of the road to the Commonwealth of Pennsylvania for Fish Commission access areas.

Union Township lies on the west side of French Creek where the Wilson Shute Bridge leads into Wilson Shute Road (S.R. 2008). Union Township was formed in 1867 from portions of Vernon, Greenwood, and Fairfield Townships. The 1880 population of 603 inhabitants lived in an entirely agricultural region, having no village or hamlet.⁷ Hence, the need existed for Union Township to be readily linked to Mead Township and Meadville. Among the early pioneers of Union township was Samuel Davis, who settled on Wilson Run in the early nineteenth century. The influx of German settlers, who were to comprise about two-thirds of the population by the time the bridge was built, commenced in 1832. These settlers were primarily from the Palatinate, Bavaria.⁸

One of these German immigrants who settled along the French Creek near the future bridge crossing was Conrad Reitze. After working as a carpenter in Meadville for eighteen years, Reitze bought his 183-acre farm from Henry C. Johnson in 1873. Soon thereafter, he established a sawmill along a millpond and erected the frame house whose original main facade fronted the railroad to the north. This property, which is bounded by the Wilson Shute Road to the south and French Creek to the east, remained in the Reitze family until 1945 when all but a small parcel along the creek and road were sold. On that parcel, Conrad Reitze's grandson, Wesley, and Adelaide, his wife, built their home. Throughout the years, the Reitzes raised cereal crops and in the 1930s expanded their dairy farming.

As of 1822, the property along the west bank of French Creek, south of Wilson Shute Road and the bridge, belonged to George W. Perkins. Buried on his own farm in 1881, his gravesite, along with several others set aside for family and neighbors, remains in a wooded edge on Gary Heckman's property on Heckman Road. Perkins' farm was willed to his daughter, Charity Van Horn Kaightlinger, who sold 31 acres of the property including the gravesite to John Kramer in 1895. By the time John Kramer died in 1904, his farm contained 77 acres which he left to his son, Henry. Upon Henry Kramer's death in 1933, the property was conveyed to his son, Harold, who in 1965 sold the property to Paul Heckman. The field that extends to the creek is currently farmed by Mr. Heckman. The property to the west of Heckman Road, owned by the Hall family, was also once part of the Perkins landholding. The cottage fronting Wilson Shute Road dates from circa 1915. Ezra Hall, who operated a dairy farm, likely built the frame bank barn and concrete masonry unit milk house in the 1920s.

FOOTNOTES

WILSON SHUTE BRIDGE
HAER No. PA-191 (Page 6)

1. "Our Iron Bridges," The Crawford Journal, Vol. XLI, No. 20. May 17, 1888.
2. The Crawford Journal, Vol. LXI, No. 24. June 14, 1888, 5.
3. Robert Stein, interview with author, July 26, 1988.
4. Commonwealth of Pennsylvania, Pennsylvania Historical and Museum Commission, Pennsylvania Department of Transportation, Historic Highway Bridges in Pennsylvania (Commonwealth of Pennsylvania, 1986), A-3.
5. Manufacturing and Mercantile Resources of Crawford County (Philadelphia: D.S. Williams & Co., 1883), 39.
6. History of Crawford County, Pennsylvania (Chicago: Warner, Beers & Co., 1885), 565.
7. Ibid., 673.
8. Ibid., 674.

BIBLIOGRAPHY

WILSON SHUTE BRIDGE
HAER No. PA-191 (Page 7)

- Bates, Samuel P., LL.D. Our County and Its People. W.A. Ferguson & Company, 1899.
- Boller, Alfred P. Practical Treatise on the Construction of Iron Highway Bridges for the Use of Town Committee. New York: John Wiley & Son, 1876.
- Bureau for Historic Preservation, Pennsylvania Historical and Museum Commission. "Bridge in West Mead Township." Pennsylvania Historic Resource Survey Form. 1982.
- Commonwealth of Pennsylvania, Department of Highways. "Steel Bridge Inspection Report." Pennsylvania Department of Transportation, District 1, Franklin, Pennsylvania. 1931-32.
- Commonwealth of Pennsylvania, Department of Transportation. "Structure Inventory Record." District 1-0 Department Files, Franklin, Pennsylvania.
- Commonwealth of Pennsylvania, Pennsylvania Historical and Museum Commission, Pennsylvania Department of Transportation. Historic Highway Bridges in Pennsylvania. Commonwealth of Pennsylvania, 1986.
- Comp, T. Allan and Donald Jackson. Bridge Truss Types: A Guide to Dating and Identifying. AASLH Technical Leaflet, No. 95. Nashville: American Association for State and Local History, 1977.
- Condit, Carl W. American Building: Materials and Techniques from the First Colonial Settlements to the Present. Chicago: University of Chicago Press, 1968.
- Crawford County Tax Assessment Records, Crawford County Historical Society, Meadville Public Library, Meadville, Pennsylvania.
- The Crawford Journal. Vols. XLI and XLII. January 1888-May 1889.
- "Highway Bridges Owned by the Commonwealth of Pennsylvania, Department of Transportation." National Register Nomination.
- History of Crawford County, Pennsylvania. Chicago: Warner, Beers & Co., 1885.
- Hopkins, H.J. A Span of Bridges: An Illustrated History. New York: Praeger, 1970.
- Interviews with: Robert Stein, July 26, 1988; Adelaide Reitze, July 27, 1988; Calvin and Marcia Ernst, July 27, 1988; Michael Hall, July 27, 1988; and Paul Heckman, July 29, 1988.
- Manufacturing and Mercantile Resources of Crawford County. Philadelphia: D.S. Williams & Co., 1883.
- New Historical Atlas of Crawford Co., Pennsylvania. Philadelphia: Everts, Ensign & Everts, 1876.

(continued)

Ohio Department of Transportation. The Ohio Historic Bridge Inventory Evaluation, and Preservation Plan. Ohio Department of Transportation in cooperation with the Federal Highway Administration, 1983.

"Our Iron Bridges." The Crawford Journal. Vol. XLI, No. 20. May 17, 1888.

Parsons Brinckerhoff Quade & Douglas, Inc. "Historic American Engineering Record for the Catawissa Bridge." Prepared for The Pennsylvania Department of Transportation, June 1985.

Pennsylvania Department of Transportation, Department of Highways. "Supplementary Bridge Record." Pennsylvania Department of Transportation, District 1, Franklin, Pennsylvania. 1942-43.

Recorder of Deeds. Crawford County Courthouse, Meadville, Pennsylvania.

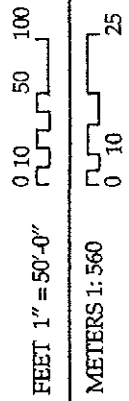
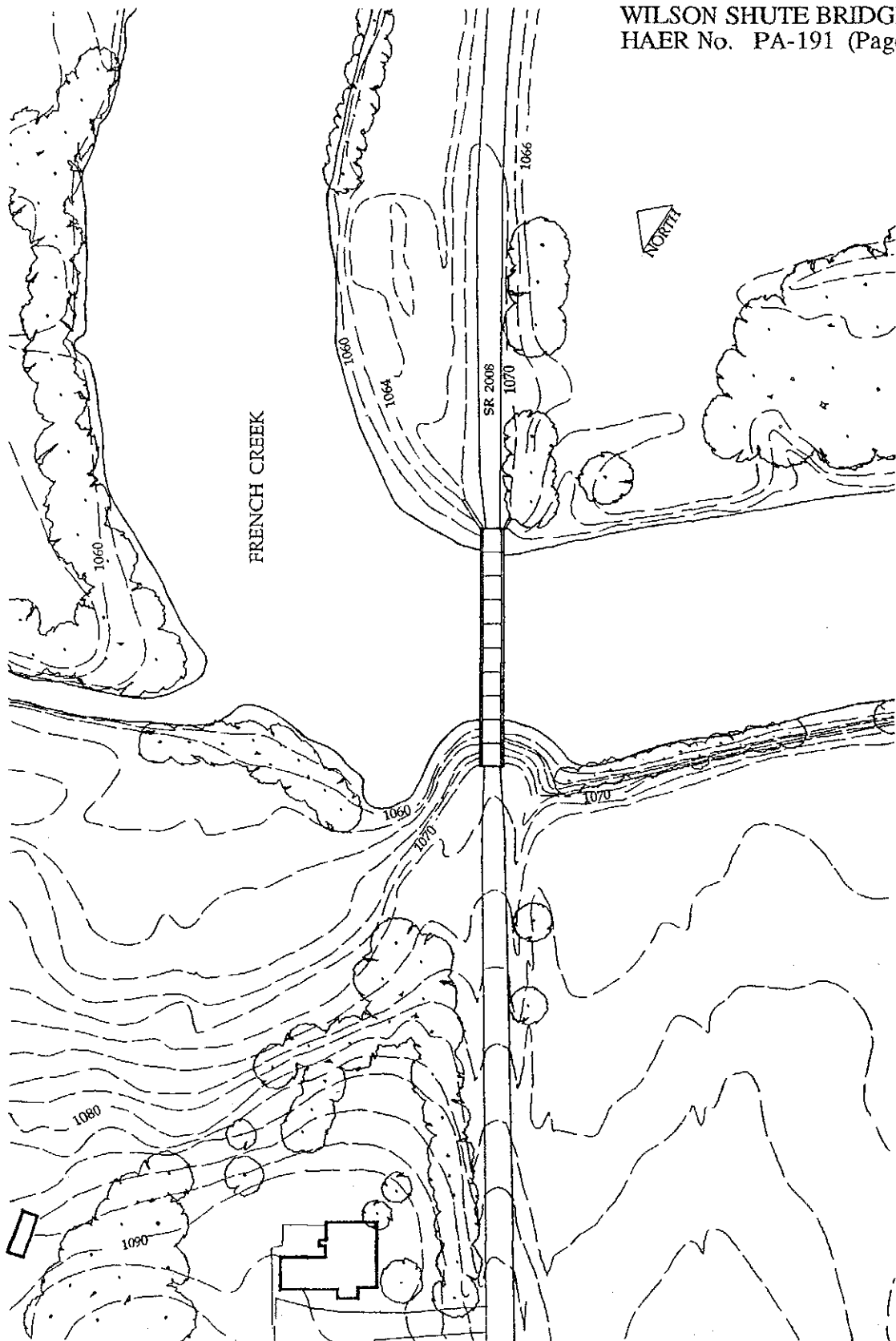
Reynolds, John Earle. In French Creek Valley. Meadville, PA: The Crawford County Historical Society, 1938.

Robinson's Township Atlas of Crawford County. H.S. Robinson, circa 1900.

Shank, William H., P.E. Historic Bridges of Pennsylvania. York, PA: American Canal & Transportation Center, 1980.

1. Wilson Shute Bridge, Crawford County, Pennsylvania. Site Plan. Original mylar in possession of Kise Franks & Straw, 219 N. Broad Street, 9th Floor, Philadelphia, Pennsylvania 19107.

WILSON SHUTE BRIDGE
HAER No. PA-191 (Page 10)



SITE PLAN

WILSON SHUTE BRIDGE
CRAWFORD COUNTY, PENNSYLVANIA